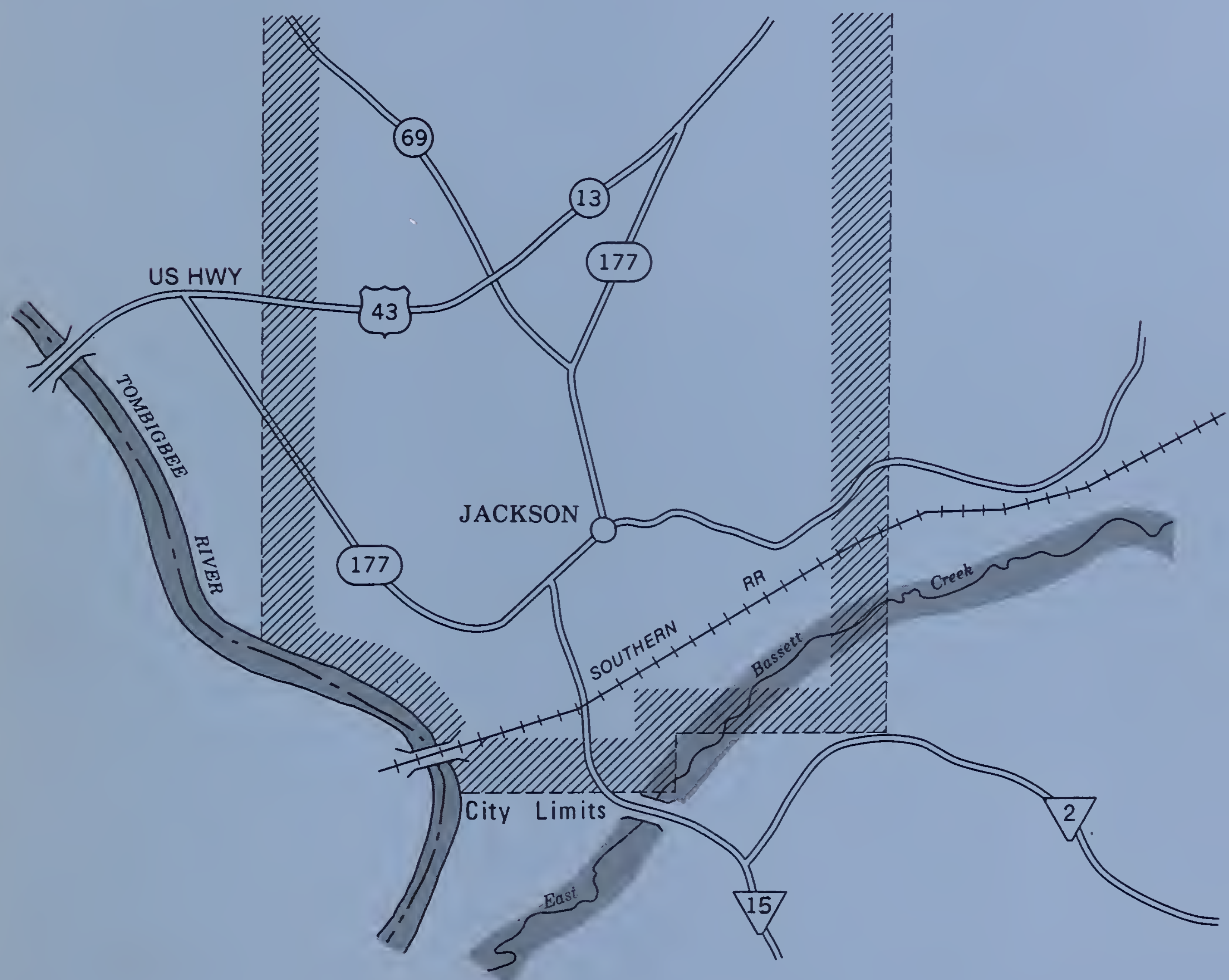
FLOOD PLAIN MANAGEMENT STUDY
TOMBIGBEE RIVER
AND EAST BASSETT CREEK
IN VICINITY OF JACKSON
JACKSON, ALABAMA



Prepared By

U.S. Department of Agriculture
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In Cooperation With

City of Jackson, Alabama

Clarke County Soil and Water Conservation District

Alabama-Tombigbee Regional Commission

State of Alabama
Alabama Department of Economic and Community Affairs

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Acknowledgements:

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Clarke County Soil and Water Conservation District

City of Jackson

Alabama - Tombigbee Regional Commission

U.S. Geological Survey, Department of Interior (USGS)

Alabama Department of Economic and Community Affairs (ADECA)

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FOREWORD

Pressures created by increased urbanization have intensified the demand to use flood plain areas in and adjacent to Jackson, Alabama. Technical information about flood hazards is essential for a local flood plain management program to be effectively planned and implemented.

This report provides flood hazard information for 10.8 stream miles along the Tombigbee River and East Bassett Creek. The drainage areas involved are 19,200 square miles in the Tombigbee River Watershed, and 258 square miles in East Bassett Creek Watershed. The report includes Flood Hazard Area Photomaps and Flood Profiles for these streams. Regulatory and corrective measures that would minimize the risk of flooding are also discussed in the report.

Identification of the major flood-prone areas, history of flooding, and pertinent existing state and local flood-prone area regulations are contained in the report. State and local governmental units will find this information valuable in assessing flood problems and determining actions needed for the judicious use of lands adjacent to the flood plain.

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INTRODUCTION

The City of Jackson requested a flood plain management study to identify local flood problems and to encourage wise use of the flood-prone area This study was conducted in accordance with a plan of study developed in November 1981 by the study participants. USDA flood plain management studies in Alabama are carried out through an April 1983 Joint Coordination Agreement between the USDA-Soil Conservation Service (SCS) and the Alabama Department of Economic and Community Affairs (ADECA). Data in this report are based on investigations and analyses performed by the SCS in cooperation with ADECA, the City of Jackson and the Clarke County Soil and Water Conservation District.

The SCS conducts flood plain management studies under the authority of Section 6 of Public Law 83-566, in response to Federal Level Recommendation No. 3 of Water Resources Council revised Unified National Program for Flood Plain Management, September 1979; and in compliance with Executive Order 11988, dated May 24, 1977. Section 11-52-1 through 11-52-84, the Code of Alabama 1975, as amended, provides the zoning authority for municipalities to develop land use controls. Sections 11-19-1 through 11-19-24 of the Code of Alabama 1975, as amended, provides authority for development of a comprehensive land management and use program in unincorporated flood prone areas of the State. It allows county commissions in Alabama to meet requirements of the National Flood Insurance Act of 1968 (as amended), and authorizes the county commissions to prescribe criteria for land management and use in flood-prone areas.

The objective of this flood plain management study is to furnish technical data to local governments so they can prevent potential flood losses that might be caused by unwise development in flood-prone areas.

Information on the possibility of future floods of various magnitudes and the extent of flooding which might occur is included for the Tombigbee River and East Bassett Creek within and adjacent to the City of Jackson, Alabama. The extent of potential flooding from the 100-year flood is shown on aerial photomaps. Elevation of expected flooding for selected recurrence intervals (10-, 50-, 100-, and 500-year events) are provided on flood profiles for the streams studied. (See "Glossary of Terms" in appendix C for detailed definitions of terms used in the report.)

By using the maps, tables, and profiles presented in this report, the flood elevation at selected locations along the streams may be determined. This information will permit local units of government to implement flood plain manangement regulations which recognize potential flood hazards.

The maps and profiles are based on conditions that existed at the time field surveys were made in 1982. Such factors as increased urbanization, encroachment of flood-prone areas, relocation or modification of bridges and other stream crossings, and stream channel improvement can have a significant effect on flood stages and areas inundated. Therefore, the results of any flood hazard analyses should be reviewed periodically by appropriate State and local officials and planners to determine if changes in watershed conditions would significantly affect future flood elevations.

The SCS can provide technical assistance through the Clarke County Soil and Water Conservation District in the interpretation and use of the information contained herein and will provide additional technical assistance and data needed in local flood plain management programs.

DESCRIPTION OF STUDY AREA

General

The City of Jackson is located in Clarke County, Alabama, within the Tombigbee River Basin (USGS Hydrologic Unit Code Tombigbee River -03160203-SCS-80-90). The study area includes flood-prone areas of the Tombigbee River and East Bassett Creek within and adjacent to the City of Jackson (see location map, Appendix A, Sheet 1 of 1). They are perennial streams. Drainage areas are approximately as follows: Tombigbee River- 19,200 square miles (at U.S. Highway 43, 1 mile west of Jackson) and East Bassett Creek 258 square miles. A total of 10.8 stream miles was studied.

Clarke County had a population of 27,702 in 1980. The City of Jackson, with a 1980 population of 6,073 experienced a 2 percent growth in the 1970-80 decade. The ADECA has projected the city's population to increase to 6,680 (10 percent) by the year 2000. The area of incorporation, at present, is approximately 14 square miles and the incorporated area subject to flooding by the 100-year frequency storm is 1.3 square miles.

TABLE 1
AVERAGE TEMPERATURE AND RAINFALL*

Season	Temperature (Degrees Fahrenheit)	Rainfall (Inches)
Winter	48.8	15.0
Spring	65.0	15.4
Summer	79.8	16.0
Fall	65.6	10.2
Yearly Average 1951-80	64.8	56.6

*Climatography - No. 81, Alabama (NOAA, Department of Commerce)

In general, rainfall is moderate to heavy throughout the year and temperatures are mild to warm with few extended periods of subfreezing weather. Subfreezing temperatures, while not uncommon, are usually of short duration. Rainfall amounts and runoff characteristics vary on a seasonal basis, with normal rainfall for winter and spring being greater than summer and autumn. Because of this seasonal distribution of rainfall, most major floods occur in late winter or in early spring.

The normal frost-free period is from approximately March 20 to November 10, about 240 days.

Geology and Topography

The City of Jackson is located on the Tombigbee River about 25 miles upstream from its confluence with the Alabama River. Jackson is situated on rough rolling hills overlooking the river and East Bassett Creek. Elevations in the flood plain range from 20 to 30 feet above mean sea level and in the main portion of the City from 230 to 250 feet above mean sea level. The flood plains are naturally wooded swamps. Sedimentation from river flooding has developed natural levees so that the flood plain slopes from the river toward

the bluffs. Highest portions of the flood plain are near the river with swampy areas back away from the stream.

The geologic materials underlying the area are sedimentary sands, clays, marls, claystones, and limestones. The formations are relatively thin, presumably thinned by being deposited over the Hatchetigbee anticline and along the Jackson Fault. Formations are Tertiary and Quarterary ranging in age from Ecocene to Holocene.

Soils

The soils within the 100-year flood hazard area formed in loamy and clayey alluvium on flood plains and stream terraces. Major soils are Angie, Cahaba, Craven, Kalmia, and Urbo. The soils on adjacent uplands formed in loamy and sandy marine sediments of Southern Coastal Plain. Major soils are Gritney, Smithdale, and Troup.

Urbo soils make up about 90 percent of the flood hazard area and are on the lower elevations within the area. These deep, somewhat poorly drained soils are frequently flooded. These soils are poorly suited to cultivated crops and fairly well suited to pasture, hay, and woodland. Building site development and the construction of sanitary facilities are limited by wetness, seepage, and permeability in addition to the flooding hazard.

Angie, Cahaba, Craven, and Kalmia soils make up about 10 percent of the flood hazard area and are on the higher elevations within the area. These deep, moderately well drained to well drained soils are rarely to occasionally flooded. These soils are well suited to cultivated crops, pasture and hay, and

woodland. Flooding is the main limitation to building site development and to the construction of sanitary facilities.

Gritney, Smithdale, and Troup soils are on uplands adjacent to the study area. These deep, well drained soils do not flood. These soils are poorly suited to cultivated crops, well suited to woodland, and fairly well suited to pasture and hay. Building site development and the construction of sanitary facilities are limited by slope and seepage.

About 10 percent of the flood hazard area soils and 10 percent of the adjacent upland soils qualify for prime farmland. These soils are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Angie, Cahaba, Craven, and Kalmia soils qualify for prime farmland within the flood hazard area. On the adjacent uplands, the less sloping areas of Gritney and Smithdale soils also qualify for prime farmland.

If detailed soils information is desired for a specific location, the Clarke County Soil and Water Conservation District or personnel in the Soil Conservation Service Field Office in Grove Hill should be consulted.

NATURAL VALUES

Land Use

The present land use in the Tombigbee River Watershed consists of cropland (14 percent), pasture (15 percent), urban and built-up areas (3 percent), woodland

(64 percent); the remaining land is in miscellaneous uses (4 percent). The flood plain land use of the study area is as follows: urban (1 percent), pasture (4 percent), and woodland (95 percent).

Wetlands

The area addressed in this flood plain management study is affected by the Tombigbee River. Portions of the flood plain are and were a part of the swamp forest complex which occurs only along major streams in the Coastal Plain.

The plants which make up the swamp forest are well adapted to tolerate periods of innundation. The dominate trees are baldcypress and water tupelo. Other tree species found in the swamp forest include sweetbay, blackgum, black willow, red maple, swamp privet, planer tree, ironwood, sycamore, cottonwood, water hickory, willow oak, overcup oak, and chestnut oak. Ground cover density and diversity is dependent upon the density and canopy expanse of the overstory trees.

Plants which are listed as endangered, threatened, or species of special concern by only the State of Alabama and which may be found in the swamp forest are white cedar, needle palm, wild canna, swamp holly, spicebush, and climbing heath.

Several activities of man are damaging to the swamp forest. This plant community is very sensitive to changes in the drainage regime and water table. Among man's activities which change or adversely affect these requirements are ditching, stream channel alterations (deepening), and permanent inundation. Land filling and vegetation removal also have adverse effects on this plant community.

Wetland types (Circular 39) associated with the swamp forest are 1, 5, 6, and 7. Type 1 comprises the bulk of the wetland areas with 5, 6, and 7 scattered throughout. Wetlands have several intrinsic values. They serve as filtration systems, flood control mechanisms, and, in some instances, a source of ground water recharge.

Fish and Wildlife

The major species of game fish in the study area include bluegill, redear and longear sunfish, warmouth, crappie, and largemouth bass. The so-called rough fish species include the catfishes, bullheads, bowfin, gar, sucker, carp, buffalo, and shad.

Swamp forests provide habitat for many game and non-game species of wildlife. Occurring or residing in swamp forests in Alabama are whitetail deer, wild turkey, gray squirrels, and rabbits. Furbearers found in these forests include oppossum, raccoon, bobcat, beaver, mink, muskrat, and river otter. In addition to these animals, the swamp forest supports an abundance of reptiles, amphibians, waterfowl, and non-game birds. The panther and American alligator also occur in these forests in Alabama. Both species are listed as endangered by the U.S. Fish and Wildlife Service.

Archeological and Historical Sites

There are 34 sites of archeological significance reported in Clarke County and one site of historic significance in Jackson.

FLOOD PROBLEMS

Historical Floods

Damaging floods have occurred several times in the past on the Tombigbee River at Jackson, Alabama. Major floods occurred in 1874, 1900, 1961, and 1979. Of these, the flood in 1874 was the greatest. The most recent major flood was April 1979 with a flood elevation of 33.5 feet (MSL) at the Alabama Electric Cooperative, mile 44.4 on the Tombigbee River (Appendix B, Flood Profile Sheet 01P).

Flood-producing storms may occur at any time of the year but are more numerous during winter and early spring. Winter storms are generally of the frontal type lasting 2 to 4 days and covering a large areas. A flood of 24-hours duration having an average frequency of occurrence in the order of once in 100 years (has a 1 percent chance of being equalled or exceeded in any given year) was selected to best reflect the present flooding problems. However, floods larger than the 100-year, 24-hour flood can, and have occurred in the study area.

Future Floods

The areas that are subject to damage by flooding along the two streams include commercial, agricultural, and residential developments along with associated roads, streets, and utilities. Approximately 2880 acres in the study area are inundated by the 100-year flood.

TABLE 2
STREAM MILEAGE AND FLOOD AREA
100-YEAR FLOOD

Stream Reach	Stream Mileage (Miles)	Flood Area (Acres)
Tombigbee River	5.0	2010
East Bassett Creek	5.8	870
Total	10.8	2880

Future development of remaining open spaces in the flood plain should be considered only if potential flood damage can be eliminated or held to acceptable minimums. A knowledge of the flood potential and hazard is important in land use planning and for management decisions concerning flood plain utilization. This report identifies those areas that are subject to possible future floods. Special emphasis is given to these floods through maps, photographs, and profiles. This report does not provide solutions to flood problems; however, it does furnish a suitable basis for the adoption of land use controls to guide flood plain development and thereby prevent intensification of the loss problems.

The areas along the Tombigbee River and the lower reach of East Bassett Creek which would be flooded by the 100-year flood are shown on Flood Hazard Area Photomaps, Scale 1" = 800' (appendix A, sheets 1 through 5). The Photomap Index in Appendix A shows the location and area covered by individual photomaps.

The actual limits of these overflow areas may vary somewhat from those shown because the contour interval and scale of the base maps do not permit precise plotting of the flood area boundaries. A more exact determination of the depth

of flooding by the 100-year and 500-year floods at any particular point along the streams can be determined from the water surface profiles and the ground elevation at the point in question. To determine the depth of flooding or the height of land above the flood, the following steps should be followed:

1. Determine the stream mileage to the point in question.
2. Read the flood elevation for this mileage from the water surface profiles.
3. Determine the ground elevation at the point in question.
4. Compare the flood height with the ground elevation to compute the depth of the flooding or the height of land above the flood.

TABLE 3
FLOOD ELEVATIONS
FEET (MSL)

Location	Frequency			
	10-Year	50-Year	100-Year	500-Year
	Tombigbee River			
U. S. Highway 43	32.7	35.2	36.2	38.3
Ala. Electric Coop (River Mile 44.4)	30.7	33.2	34.2	36.3
	East Bassett Creek			
County Road 15	30.7	33.2	34.2	36.3

FLOOD PLAIN MANAGEMENT

Existing Flood Plain Management

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 encourage wise management of flood-prone areas through local regulation. The State of Alabama, responding to the National Flood Insurance Program, authorized and granted powers, by Section 11 of the Code of Alabama 1975, to each county or local government in Alabama to prescribe criteria for land management, including control measure in flood-prone areas. The Alabama Department of Economic and Community Affairs and the Regional Planning Commissions assist county and local governments in carrying out this authority by developing comprehensive land management programs in flood-prone areas. The City of Jackson has participated in the National Flood Insurance Program since August 11, 1975 (Emergency Program Phase). Entrance into this program authorized the sale of flood insurance at subsidized rates for both residential and non-residential structures and mobile homes and their contents throughout the areas subject to flooding in the City. The National Flood Insurance Act of 1968 requires local units of government to develop land use control measures for flood-prone areas based on competent evaluation of flood hazards and applicable state standards. The City agreed to adopt the codes and ordinances necessary to protect future development in the community from flood hazards.

Alternatives For Flood Plain Management

The current low level of flood damages will allow local officials to emphasize strengthening their flood plain management program primarily to proper development and use in the flood plain and regulating upland land use changes to

avoid increasing future runoff rates. Technical flood hazard information is a valuable tool which the City of Jackson can use to guide development and use of the flood-prone area, thereby minimize future losses from flooding. This section is intended to outline a program by which the City can reduce the destruction and loss of property associated with a flood, while at the same time achieving wise use of the flood-prone areas. The Flood Hazard Area Photomaps prepared for this study should be adopted as part of Jackson's flood plain management program until a Flood Insurance Study is completed. Additional controls may need to be adopted when more detailed information is available. It is recommended that the City develop a program to publicize the availability of flood insurance and encourage community residents to participate in the program, especially those located in or near flood-prone areas. Residents in flood-prone areas should be made aware of the impacts of not obtaining the Flood Insurance coverage.

In conformance with the requirements of the National Flood Insurance Program (NFIP), the City is already enforcing certain regulations in identified flood-prone areas. These include the basic subdivision and zoning ordinances and construction codes. A local regulatory program should be implemented through the use of codes and ordinances and proper administrative procedures. Revision of existing codes and adoption of effective policies and procedures can result not only in protection of existing structures but also in the wise management of flood-prone areas in future years. The land use control measures in flood-prone areas are an important aspect of a flood plain management program. These controls include zoning,

subdivision regulation, and construction standards. Additional regulations developed for the flood-prone areas should be integrated with the City's existing land use control policies. The ordinances that are amended and the additional controls that are adopted should be mutually supporting and should be compatible with the city's overall development policies. Assistance can be provided by the Alabama-Tombigbee Regional Commission in developing the regulatory measures needed if requested. The following alternatives may also be viable as a part of the city's overall plan to minimize future flood damages:

Flood warning and forecasting: The National Oceanic and Atmospheric Administration (NOAA) National Weather Service (NWS) Office in Birmingham, Alabama, issues flood warnings for the Tombigbee River. Severe weather and flood warnings, along with general weather forecasts, are distributed by the Weather Wire Service. This service links, by teletype, the National Weather Service offices with outlets to news media (newspaper, radio, television) and any other private or government agency in the area where a primary wire service has been established, if they arrange to secure a drop on this circuit. Other local radio stations may obtain the information relayed through news wire services. Provisions for evacuation operations of county public service agencies are accomplished through the Clarke County Civil Defense Office. Stage readings and predictions of the National Weather Service are furnished to local and county Civil Defense Units when flooding is predicted in their area. Once a flash flood watch is issued by the weather service, the County Civil Defense Office monitors stream stages and issues hourly statements to local radio stations for broadcast to the public. Evacuation of low-lying areas is accomplished through the help of local National Guard Units and rescue squads.

Construction Standards: The city is currently enforcing the Standard Building Codes published by the Southern Building Code Congress and the National Electrical Code published by the National Fire Protection Association. To comply with the National Flood Insurance Program standards, Jackson will need to adopt more specific flood proofing standards for construction in flood-prone areas. In addition, standards should be adopted for filling operations in areas subject to flooding, and guidelines be established for storage of materials in flood-prone areas. These standards may be incorporated into a single flood-prone area ordinance that will supplement the exisitng construction codes.

Other Alternatives: Two other methods of flood damage prevention are particularly adaptable to the situation of Jackson. These are flood proofing and temporary evacuation.

Flood proofing involves adjustments to structures and their contents to minimize damage due to flooding. Damageable equipment can be enclosed in waterproof coverings. Buildings may be waterproofed by closing openings in outer walls with impervious materials, installing check valves on sewer lines, installing temporary bulkheads over doors or windows, and other adjustments. Well-built commercial and industrial buildings are particularly adaptable to flood proofing. Information on flood proofing techniques is available from the Alabama Department of Economic and Community Affairs.

Temporary evacuation is sometimes the only practical method of reducing flood damage at existing developments; but to be effective, reliable forecasts of stream stages must be available to provide time for action. Such forecasts are available for the Tombigbee River and its major tributaries from the

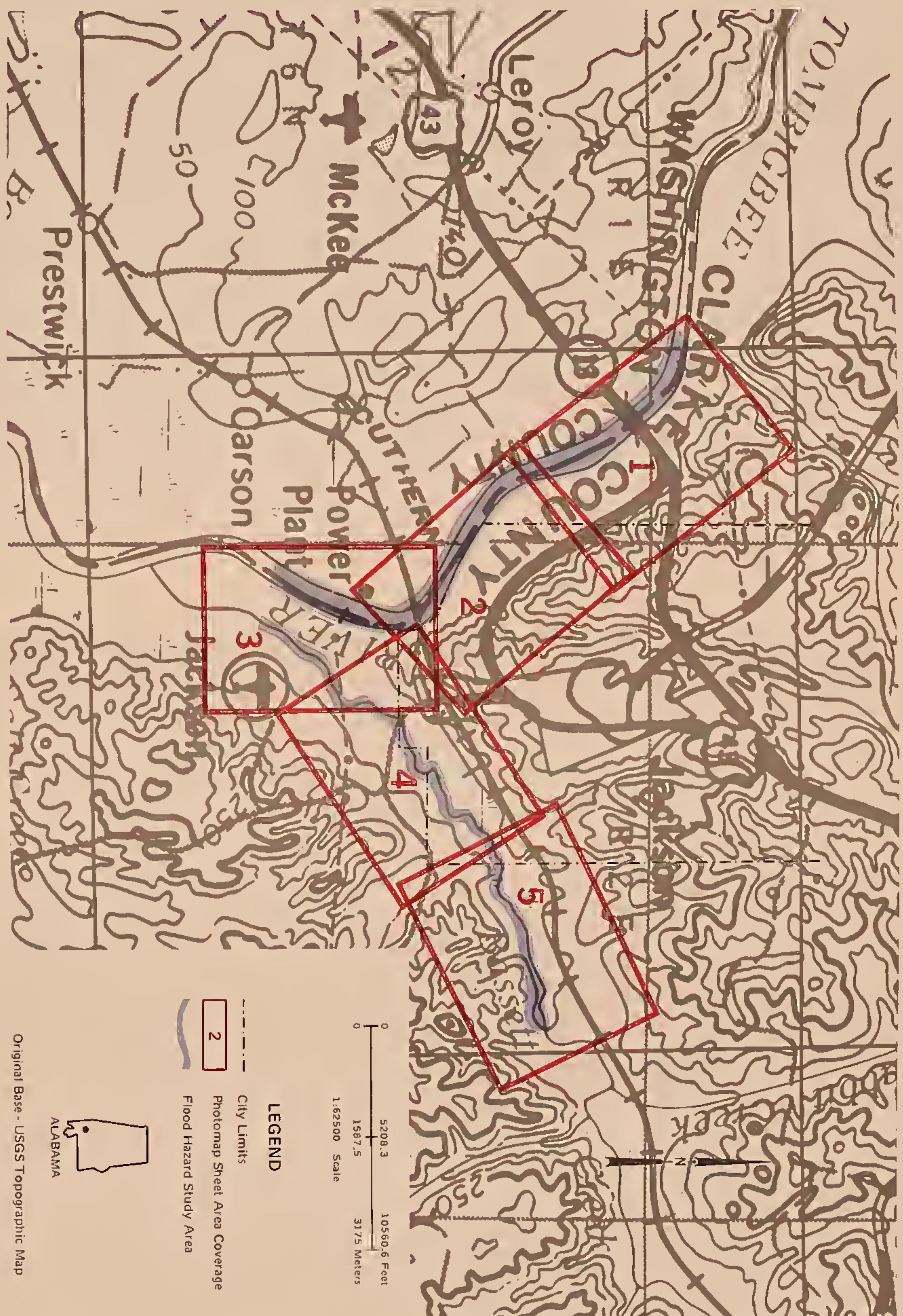
National Weather Service. Public safety officials of Jackson may wish to consider the development of an evacuation plan.

Public Information: The success of the flood plain management program will depend greatly upon the efforts made by the local government to inform the public of the program. A public information program should be designed specifically to disseminate to all affected parties the essentials of the program, including code requirement, standards, and insurance provisions. Because the program affects not only future construction but also existing development, it is essential that property owners, land developers, real estate interests, construction interests, and lending institutions be acquainted with the Flood Plain Management Program and all of its implications. A knowledge and well-informed citizenry is the key to a successful flood plain management program.

APPENDIX A

PHOTOMAP INDEX AND LOCATION MAP

FLOOD HAZARD AREAS - SHEETS 1 THROUGH 5



SHEET 1 OF 1

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
JACKSON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
CLARKE COUNTY

PHOTOMAP INDEX AND LOCATION MAP

TOMBIGBEE RIVER AND EAST BASSETT CREEK

SHEET 1 OF 5	U S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE JACKSON, ALABAMA FLOOD PLAIN MANAGEMENT STUDY CLARKE COUNTY	FLOOD HAZARD AREA TOMBIGBEE RIVER

SHEET 2 OF 5

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JACKSON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
CLARKE COUNTY

FLOOD HAZARD AREA

TOMBIGBEE RIVER

SHEET 3 OF 5

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JACKSON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
CLARKE COUNTY

FLOOD HAZARD AREA

TOMBIGBEE RIVER

SHEET 4 OF 5

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
JACKSON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
CLARKE COUNTY

FLOOD HAZARD AREA

EAST BASSETT CREEK

SHEET 5 OF 5

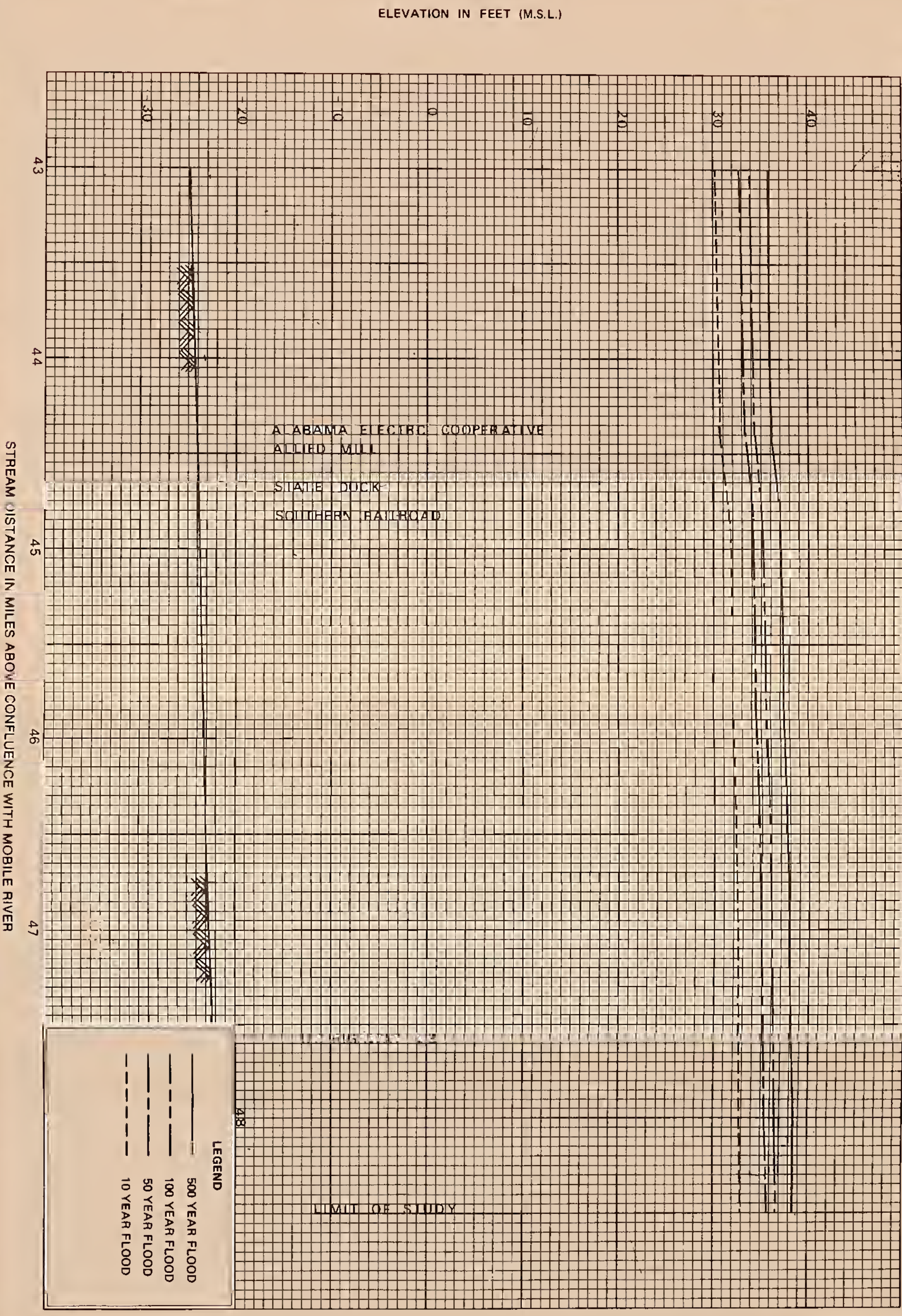
U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
JACKSON, ALABAMA
FLOOD PLAIN MANAGEMENT STUDY
CLARKE COUNTY

FLOOD HAZARD AREA

EAST BASSETT CREEK

APPENDIX B

FLOOD PROFILES



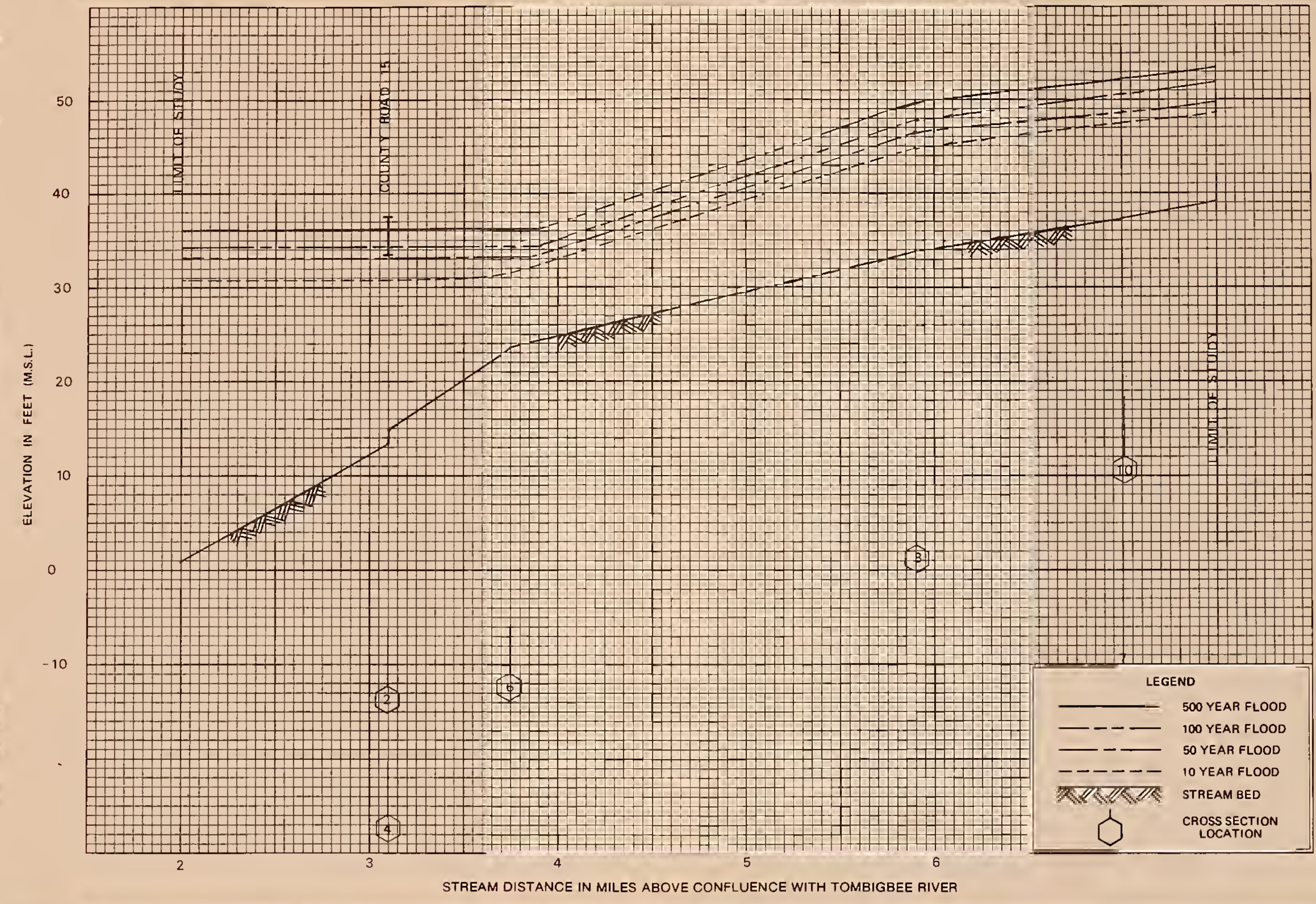
01P

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JACKSON, ALABAMA
(CLARKE COUNTY)

FLOOD PROFILES

TOMBIGBEE RIVER



U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

JACKSON, ALABAMA
(CLARKE COUNTY)

FLOOD PROFILES

EAST BASSETT CREEK

02P

APPENDIX C

INVESTIGATION AND ANALYSIS

ELEVATION REFERENCE MARKS

GLOSSARY OF TERMS

REFERENCES CITED

INVESTIGATION AND ANALYSIS

Flood Data

There are several stream gaging stations located in the Tombigbee River Basin; however, three stations are located near the study area. The one nearest the study is 02470040 located on the Highway 43 bridge, 1 mile west of Jackson. The station, water stage recorder 0247000, is located on the Tombigbee River below Coffeeville Lock and Dam at mile 74.2. Records from 1960 to 1971 are in the files of Corps of Engineers and October 1971 to current year in reports of U.S. Geological Survey. One station is near the study area on East Bassett Creek at Walker Springs, Alabama (02470100 188 squares miles drainage area, see Table of Annual Peak Discharges, Tables 4 & 5, page C-3 and C-4). To supplement gaging station records, newspaper files and historical documents were searched for information concerning past floods. In addition, high water marks were recovered for some of the past floods.

Flow-frequency curves were developed from computer analysis of peak discharge records and "Floods in Alabama, Magnitude and Frequency", U.S. Geological Survey (1973), for drainage areas above 15 square miles. 3/

Surveys

Field surveys completed in 1982 included 5 stream channel and valley cross sections, 1 bridge and 1 road profile within the study area on East Bassett Creek. Valley and channel cross sections were surveyed at selected locations to determine valley shape, width, and other hydraulic characteristics. Elevations of roads, bridges, culverts, and other control points were established. High water marks were surveyed for the 1961 and

1979 historical floods. All of the surveys were referenced to mean sea level datum. The U. S. Geological Survey 7½-15-minute topographic quadrangle sheets (10-foot contour) were used for orientation. Aerial photographs, scale 1" = 800', taken in 1974 were used for base maps.

Preparation of Map and Profiles

Flood Hazard Area Photomaps, scale 1" = 800', were prepared by drawing the limits of the 100-year flood on aerial photos (appendix A, sheets 1 through 5) to indicate the extent of the area subject to inundation. The photomaps are reproductions of ASCS photomaps taken in November 1974. The flood profiles were drawn at a scale of 1" = 0.5 mile (appendix B, sheet 01P-02P). The profile stationing is in terms of miles and is measured from the aerial photographs.

Natural and Cultural Values

Natural and cultural values in the flood plain area were evaluated via on-site field reconnaissance conducted by the staff biologist and the local district conservationist. Qualitative observations were made along a line transit in the study area.

TABLE 4

ANNUAL PEAK DISCHARGE RECORDS

02470000 TOMBIGBEE RIVER NEAR LEROY, ALA. 3/

LOCATION -- Lat 31°34', long 88°02', in sec. 13, T.7 N., R. 1 W, at lock dam No. 1, 4 miles upstream from Jackson Creek, 5 miles Northwest of Leroy, and at mile 55.6.

AREAL PARAMETERS -- Drainage area, 19,100 sq mi; channel slope, 0.69 ft/mi; channel length, 415 mi; angle of main channel, 150 degrees.

GAGE -- Nonrecording. Datum of gage is 7.28 ft above mean sea level, datum of 1929.

REMARKS -- Some regulation at low flow by locks and dams.

STAGE-DISCHARGE RELATION -- Defined by current-meter measurements. Affected by variable slope.

ANNUAL PEAK DISCHARGE AND STAGE

WATER YEAR	ANNUAL PEAK DISCH (CFS)	DATE	GAGE HEIGHT OF ANNUAL PEAK (FT)	WATER YEAR	ANNUAL PEAK DISCH (CFS)	DATE	GAGE HEIGHT OF ANNUAL PEAK (FT)
1874	280000	05- -74		1947	149000	01-31-47	
1900	269000	04- -00		1948	158000	03-08-48	
1929	190000	04-02-29		1949	173000	01-20-49	
1930	149000	11-29-29		1950	114000	01-24-50	
1931	62500	04-11-31		1951	201000	04-11-51	
1932	120000	03-06-32		1952	79700	01-03-52	
1933	165000	12-29-32		1953	108000	03-07-53	
1934	88900	03-17-34		1954	78700	01-30-54	
1935	123000	03-24-35		1955	94200	04-18-55	
1936	134000	02-17-36		1956	99800	03-25-56	
1937	117000	02-06-37		1957	101000	02-16-57	
1938	192000	04-10-38		1958	113000	12-03-57	
1939	114000	03-15-39		1959	75200	02-21-59	
1940	105000	07-26-40		1960	110000	03-17-60	
1941	66700	03-15-41		1961	252000	03-05-61	48.24
1942	90900	03-30-42		1962	186000	12-30-61	44.70
1943	113000	03-31-43		1963	66600	03-17-63	31.84
1944	149000	04-27-44	42.03	1964	143000	04-17-64	41.49
1945	114000	03-07-45		1965	130000	02-24-65	39.87
1946	169000	02-25-46		1966	135000	02-22-66	36.69

TABLE 5

02470100 EAST BASSETT CREEK AT WALKER SPRINGS, ALA. 3/

LOCATION -- Lat 31°32', long 87°47', in NE¼ sec. 32, T. 7N., R. 3 E., Clarke County, near right bank on downstream side of bridge on county road, 1,000 ft southwest of Walker Springs, and 2.8 miles upstream from Rabbit Creek.

AREAL PARAMETERS --Drainage area, 188 sq mi; channel slope, 9.3 ft/mi; channel length, 28.0 mi; average basin elevation, 250 Ft above mean sea level; distance from Gulf, 31.690 degrees of lat; angle of main channel, 190 degrees; storage in lakes and swamps, 1 percent; forest cover, 90 percent; soil index, 6.67; geologic index, 1.78; average annual precipitation, 57 in.; 24-hour two-year rainfall intensity, 4.9 in.

GAGE --Nonrecording. Datum of gage is 60.02 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1970, recording gage at same site and datum.

STATE-DISCHARGE RELATION --Defined by current-meter measurements below 10.0 ft and 8,000 cfs. Bankfull stage and discharge, 6.0 ft and 90 cfs.

ANNUAL PEAK DISCHARGE AND STAGE

WATER YEAR	ANNUAL PEAK DISCH (CFS)	DATE	GAGE HEIGHT OF ANNUAL PEAK (FT)	WATER YEAR	ANNUAL PERK DISCH (CFS)	DATE	GAGE HEIGHT ANNUAL PEAK (
1956	19300	07-08-56	12.25	1966	3490	02-18-66	8.30
1957	6090	04-09-58	9.31	1967	1470	02-09-67	6.98
1958	5570	03-09-58	9.10	1968	8260	11-01-67	10.09
1959	5310	06-10-59	8.98	1970	4580	03-04 70	8.72
1960	4790	06-03-60	8.78	1972	6120	12-07-71	9.31
1961	13400	02-19-61	11.38	1973	9390	03-08-73	10.42
1962	7560	12-10-61	9.84	1974	9500	04-14-74	10.45
1963	1670	01-22-63	7.19	1975	8470	02-17-75	10.16
1964	2470	04-28-64	7.80	1976	10900	03-31-76	10.81
1965	4530	01-25-65	8.70	1977	6450	04-01-77	9.44

ELEVATION REFERENCE MARKS

(See Flood Hazard Areas)

TABLE 6
ELEVATION REFERENCE MARKS 1/

REFERENCE MARK	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
USGS W-9	62.461	--At Jackson, Clarke County, on the South Railway, 123 feet north-northwest of the north corner of the station, 101 feet northwest of the northwest rail of the main track, inside the corner of the fence around the Standard Oil Co. bulk plant, 3 feet south-west of the northeast fence, 2.9 feet north-west of the southeast fence, 3.5 feet west-northwest of the corner, 3.5 feet northwest of a white wooden witness post, and about 1-1/2 feet higher than the track. A United States Geological Survey standard disk, stamped "62 63 W 9 1941" and set in the top of a concrete post projecting 6 inches above ground. NOTE:--First-order leveling by this Bureau in 1952 indicates an elevation of 19.038 meters or 62.461 feet for this mark.
USGS Z364	51.240	-- 3.8 miles southwest along the Southern Railway from the station at Walker Springs, Clarke County, 3.1 miles northeast of the station at Jackson, midway between mileposts 84 and 85, 96 feet east-southeast across the track from pole 2021, at a woods-road crossing, 55 feet northeast of the center line of the woods road, 55 feet east of the northeast end of a 24-inch pipe culvert under the woods road, 41 feet southeast of the southeast rail, 2 feet southwest of a white wooden witness post, and level with the track. A standard disk, stamped "Z 364 1951" and set in the top of a concrete post projecting 3 inches above ground.

TABLE NO. 6 CONTINUED

REFERENCE MARK	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
USGS J365	50.810	--2.0 miles northeast along the Southern Railway from the station at Jackson, Clarke County, 0.4 mile northeast of milepost 86, 0.2 mile west of a curve with tangents extending west and north east, 0.1 mile east of a curve with tangents extending east and southeast, 114 yards west of a double 4-foot con crete-pipe culvert under the track, 80 feet south across the track from pole 1985, 90 yards east of a woods-road crossing, 44 feet south of the south rail, 2 feet south of a white wooden witness post, and about 2 feet lower than the track. At standard disk, stamped "J 365 1951" and set in the top of a concrete post projecting 3 inches above ground.
K365	45.889	--1.0 mile northeast along the Southern Railway from the station at Jackson, Clarke County, 0.4 mile northeast of mile-post 87, 80 yards northeast of the northeast end of a cut, 219 feet northeast of a station-one-mile sign, 167 feet southwest of the west corner of a trestle over a creek, 26.5 feet northwest of the northwest rail, 3.5 feet southeast of pole 1950, and about 1 1/2 feet lower than the track. A standard disk, stamped "K 365 1951" and set in the top of a concrete post projecting 4 inches above ground.
RM 2	39.10	A chiseled square on top of the northeast corner of the curb wall and at the north-west end of first bridge on county road 15 south of Jackson.
RM 4	31.21	A chiseled square on top of the west end of a 24-inch concrete pipe under County Road 15, 100 feet south of junction of County Road 2.
RM 7	51.39	On top of bolt at the southwest corner of railroad light control box at the intersection of Warren Street with county road and on south side of railroad.

TABLE NO. 6 CONTINUED

REFERENCE MARK	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
RM 8	61.905	Northeast end of centerline of bridge over Tombigbee River on US 43 at Jackson, AL.
RM 9	106.48	Nail in side of power pole at west edge of right of way of state road 177 and on south side of road to water treatment plant at Jackson, AL.
RM 10	44.91	On top of the west end of 18" inch con crete pipe under state road 177, north and across road from two old houses, just north of woods road leading west with gate on rights of way.
RM 11	52.68	On top of fire plug on west side of State Road 177, and across road from swimming pool and recreation area.
RM 12	56.27	A chiseled square on top of large rock on the east side of State Road 177 and on south side of the north entrance to Bladon Springs Baptist Assn. Center.
RM 13	45.99	Cross nails in the top of an 8 inch cresote pole at the southwest corner of wing wall of a culvert under State Road 177, at the north drive to Harper Middle School.
RM 14	53.30	On top of steel post on north side of gate to river road south of Harper Middle School.
RM 16	57.96	Nail in side of power pole with vapor light in front of Jackson Sawmill Company office.
RM 18	42.17	On top of bolt at the northeast end of a railroad bridge on spur track to lumber mill and on east side of paved road.
RM 19	50.09	On top of fire plug just east of spur railroad track to Allied Paper Company.

TABLE NO. 6 CONTINUED

REFERENCE MARK	ELEVATION IN FEET (MSL)*	DESCRIPTION OF LOCATION
RM 21	35.13	A chiseled square on top of the southeast corner of concrete slab at the pumping station of Allied Paper Company water intake.
RM 23	40.55	On top of fire plug at Hoven Springs, Jackson Water Supply.

* Mean Sea Level (MSL).

1/ Locations designated on Flood Hazard Area Photomaps (Appendix A, Sheets 1 through 5).

GLOSSARY OF TERMS

Bridge Area--The effective hyrdaulic flow area of a bridge opening accounting for the presence of piers, attached conduits, and skew (alignment), if applicable.

Channel--A natural or artificial water course of perceptible extent with definite bed and banks to confine and conduct continuously or periodically flowing water.

Flood--"Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas from:

(1) The overflow of inland or tidal waters and/or

(2) The unusual and rapid accumulation of runoff of surface water from any source.

Flood Frequency--A means of expressing the probability of flood occurrences as determined from a statistical analysis of representative streamflow or rainfall and runoff records. It is customary to estimate the frequency with which specific flood stages or discharges may be equalled or exceeded, rather than the frequency of an exact stage or discharge. Such estimates by strict definition are designated "exceedence frequence," but in practice the term "frequency" is used. The frequency of a particular stage of discharge is usually expressed as occurring once in a specified number of years. Also see definition of "recurrence interval." For example - A 100-year flood is one having an average frequency of occurrence in the order of once in 100 years. It has a 1 percent chance

of being equalled or exceeded in any given year. It is based on statistical analyses of streamflow records available for the watershed and analyses of rainfall and runoff characteristics in the general region of the watershed.

Flood Hazard Area--Synonymous with Flood Plain (general). Used in FEMA National Flood Insurance Program. Commonly used in reference to flood map.

Flood Peak--The highest stage or discharge attained during a flood event; also referred to as peak stage or peak discharge.

Flood Plain (general)--The relatively flat area or low lands adjoining the channel of a river, stream, or watercourse; ocean, lake, or other body of standing water which has been or may be covered by floodwater.

Floodway Fringe--The portion of the flood plain beyond the limits of the floodway. Flood waters in this area are usually shallow and slow moving.

Flood Plain (specific)--A definitive area within a flood plain (general) or flood-prone area known to have been inundated by a historical flood, or determined to be inundated by floodwater from a potential flood of a specified frequency.

Flood-Prone Area--Synonymous with Flood Plain (general). Used in Alabama land management and use law.

Flood Profile--A graph showing the relationship of water furface elevation to stream channel location. It is generally drawn to show the water surface to elevation for the peak of a specific flood, but may be prepared for conditions at a given time or stage.

Flood Stage-- The elevation of the overflow above the natural banks of a stream or body of water. Sometimes referred to as the elevation and the flood peak elevation measures for a specific storage area.

Floodway--The channel of the stream and adjacent portions of the flood plain designated to carry the flow of the design flood. In Alabama this is the 100-year frequency flood.

High Water Mark (HWM)--The maximum observed and recorded height or elevation that floodwater reached during a storm, usually associated with the flood peak. The high water mark may be referenced to a particular building, bridge, or other landmark, or based on debris deposits on bridges, fences, or other evidence of the flood.

Low Bank--The highest elevation at a specific stream channel cross section at which the flow in the stream can be contained in the channel without overflowing into adjacent overbank areas.

Low Point on Roadway--The lowest elevation on a road profile usually in the vicinity of where the road crosses the stream. It is the first point on the roadway to be flooded.

Potential Flood--A spontaneous event (natural phenomenon) capable of occurring from a combination of meterological, hydrological, and physical conditions; the magnitude of which is dependent upon specific combinations. See Flood and Flood Frequency.

Prime Farmlands--Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Land that may qualify as prime farmland could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air.

Recurrence Interval--The average interval of time expected to elapse between floods of a particular severity based on stage or discharge. Recurrence interval is generally expressed in years and is determined statistically from actual or representative streamflows. Also see definition of Flood Frequency.

Roadway at Crossing (Top)--The elevation of the roadway immediately above the stream channel. It may be higher than the low point of the roadway.

Runoff--That part of precipitation which flows across the land and enters a perennial or intermittent stream.

Stream Channel--A natural or artificial watercourse of perceptible extent, with definite bed and banks to confine and conduct continuously or periodically flowing water.

Stream Channel Bottom--The lowest part of the stream channel (either in a constructed cross section or a natural channel). Bottom may be plotted and connected to provide a stream bottom profile.

Stream Channel Flow--That water which is flowing within the limits of a defined watercourse.

Stream Terrace--A flat or undulating plain bordering a flood plain. Terraces normally occur at higher elevations than flood plains and usually are either free from flooding or flooded less often than once every two years.

Structural Bottom of Opening--The lowest point of a culvert or bridge opening with a constructed bottwm through which a stream flows that could tend to limit the stream channel bottom to that specific elevation. This structural bottom may be covered with sediment or debris which further restricts the size of the opening.

Top of Opening--The lowest point of a bridge, culvert or other structure over a river, stream or watercourse that limits the height of the opening through which water flows. This is referred to as "low steel" or "low chord" in some regions.

<u>Watershed</u>--A drainage basin or area which collects and transmits runoff usually by means of streams and tributaries to the outlet of the basin.

<u>Watershed Boundary</u>--The divide separating one drainage basin from another.

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